

Exploring innovative solutions to bridge the knowledge gap on hydropower



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What are they talking about?

100-year flood

Peak load (MW)

Expropriation

Silt trap

Regulating reservoir

Flushing

Flood gate

Flow duration curve

Storage capacity

Pumped hydro storage

Geomembrane

Intake

Fish ladder

Epilimnion

Load factor

Run-of-river dam

Concrete gravity dam

Drawdown zone

CAPEX

Rock fill dam

Maximum output capacity (MW)

Active storage capacity

Bypass channel

I don't understand a word you are saying!

You don't need to understand everything about how hydropower dams are working... **But you need to understand something! In your language!**

Put yourself in **their shoes**:

- Illiterate, unable to read, write or calculate
- Literate, but went up to primary school and did not complete it (i.e. semi-literate)
- Literate, went to uni, but did not take science classes
- Literate, went to uni, took science classes, but not “hydraulic”, “hydrology”, “civil engineering”, “electro-mechanical” specialty but with no English as a major
- **or speaking languages where hydropower words do not exist!**

When stakeholder engagement and public consultations start about a hydropower projects, local communities often **do not get a clue of what the Project teams are talking about!**

This is applicable to countries in the Global South, but also to France (trust us!) and anywhere around the world!

Failures in engaging stakeholders on hydropower

Hydropower projects should be **guided by international standards and industry practices.**

However, frequent failure **in delivering clear, culturally adapted and easily understandable information** about hydropower projects and their impacts:

- Developers **can't** (lack of time, money, staff) or **don't want to** (keeping people in the dark is a usual way of making hydropower projects come true – or so they think!)
- Developers **do not know how to do it or do it wrong**: making an audience sit under a tree and talk about a Project with a few leaflets or a PowerPoint or poster is not good enough...

Creation of **misunderstandings** and a **knowledge gap** detrimental to the capacity of affected communities to **challenge the Project, negotiate with the Project Team** and ensure that it is **developed in coherence with their wishes.**

“Develop a **systematic, effective, inclusive and meaningful communication and consultation with stakeholders** from the earliest stages of hydropower planning, in order to **minimise stakeholder risk** for the project and **reduce impacts from the project on project-affected stakeholders** but above all to include affected communities in decision-making on the project”.

IHA How-to-guide Hydropower
Communications and Consultation

Project-affected communities are hydropower Project first partners. They can **make or break** a hydropower Project anywhere around the world.

So how should we proceed?

Step 1: Know your audience

- Strong social baselines with a **detailed analysis of the languages spoken, literacy and educational levels** of the Project-affected communities, their **access to communication means** (radio, internet, TV) and **preferred means and tools of communication** (orally, in written, web-based, etc.).
- **Return of experience** on how past projects engaged with Project-affected communities also useful to **identify pitfalls**.

Step 2: Propose “adapted” Project information material – essentially visual tools to overcome language barriers

- Use **visual material**, graphic displays or images, videos and animation, when the majority of the public is **illiterate or semi-literate**.
 - **Produce 3-D physical models** of dams, reservoirs, turbines, bypass channels, powerhouses, caverns to improve visualisations of hydropower components
- “In humans, the visual sense overcome the verbal sense” – “An effective visualisation will facilitate quicker understanding and higher retention of relevant information” (Ana Roque de Oliveira, 2024)
- If using words, **use few and simple words**: technical words must be transcribed into easily understandable wordings. Words that are not absolutely required for the public to understand the Project shall be avoided.

Example from a hydropower project in Malawi

Using internal resources to EDF specialized in producing IEC material for various hydropower projects of the company in France and abroad through modelling, 3D printing or laser cutting, **production of a large scale model of a hydropower Project in Malawi using an aerial view and local topography to explain the concept of having two dams and two reservoirs with different sizes.**

Model used by ESIA Consultants during public information and consultation meetings with Project-affected communities.

Excellent feedback and strong interest from Project-affected communities.



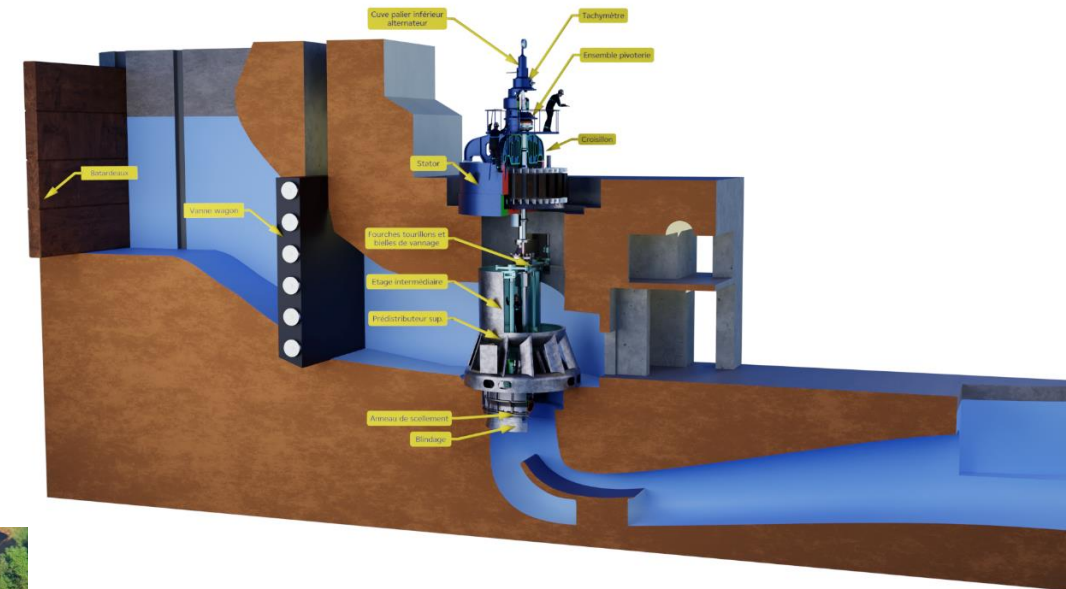
Also see other examples of hydro models in IHA How-to-guide
Hydropower Communications and Consultation, 2024

Other examples from France hydropower projects

Productions from EDF Hydro 3-D printing Centre CCI3D (Vincent Vansuyt, Alain Donzel)

Artificial images offering cross-section views of subterranean infrastructures that are often **difficult to apprehend for stakeholders**

And videos showing the same thing!



Cusset hydropower project turbine complex



Saut-Mortier Pumped Storage Hydro Plant

Other examples from France hydropower projects

Productions from EDF Hydro 3-D printing Centre CCI3D (Vincent Vansuyt, Alain Donzel)

Physical models using **3D printing or woodboard laser cutting** displaying the main hydropower project features in a natural topography with downstream effects of water releases...

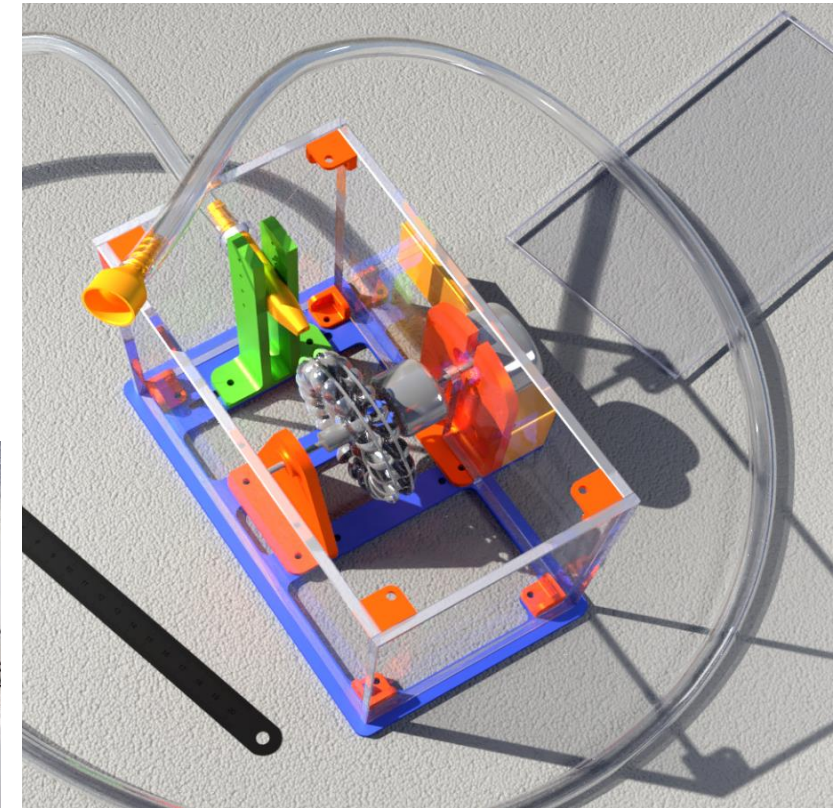
With Lego's in it!



Model of a powerhouse to prepare the change of transformer



Downstream a hydropower dam: effects of water releases on safety



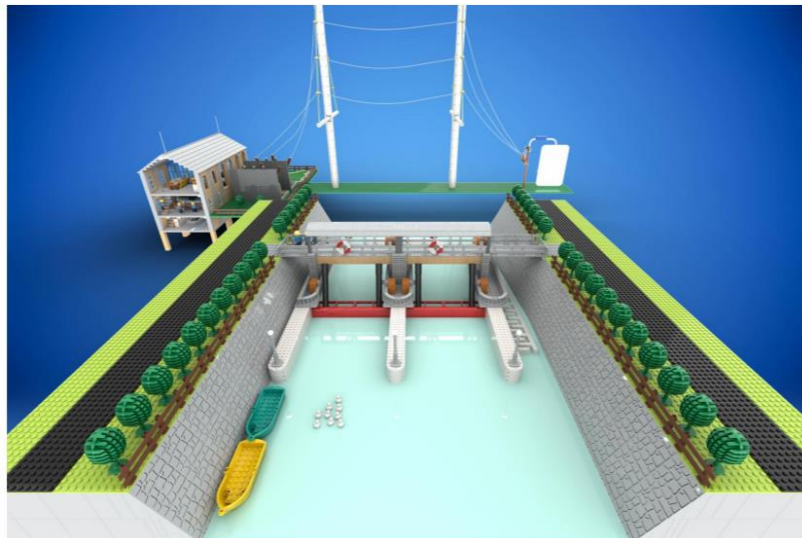
Educational model of a Pelton turbine with its alternator

Latest EDF CCI3D creation

Alain Donzel, Clément Giroud, Hélène Garcia-Loubier at EDF Hydro CCI3D



A hydropower LEGO box
(pilot project not yet in production)



Going beyond hydro technical features: resettlement for a hydro project in Malawi

Architects drawings to help project-affected persons
project themselves in their new homes.

And Lego houses to **discuss the housing settings!**



@MOD Chartered Architects, Malawi



@SLR Matthew Hemming

But that might not be enough!

One-time public consultation session with project-affected communities is not enough to “teach” them about how a hydropower project works... When an engineer needs more than 5-year of studies for that, and much more years of experience!

Internally to the developer’s teams, consideration should be given to:

- **Languages** in which the information will be shared, and how **hydropower technical words exist in that language.**
- **Taking care of preparing the project information visual tools** (and not putting this under the ESIA consultant responsibility).
- Systematising the **training and participation of technical teams to stakeholder engagement** activities, especially public meetings.
- **Training Project E&S and CLO Teams** on technical aspects of hydropower projects, as they often lack that competency.
- Using **GIS-based tools to gather community-based information and produce interactive maps.**

But that might not be enough!

Beyond that, project developers should envisage:

- Systematizing the use of **visual tools** as they have the power to **promote dialogue, shared learning and overcome language and cultural barriers**.
- Supporting the **production of 3-D physical models easily transportable**, and the production of video spot showing the details of the Project, including insiders view of the caverns, powerplants, turbine installation, etc. Several physical models could be left at local schools.
- Giving **more time to public meetings (or having more meetings)** to ensure part of it is dedicated to teaching participants on how hydropower projects works.
- Organizing **information sessions in local schools and colleges** during the public consultation process to ensure children are explained about hydropower projects.

And why not:

- Hiring **experts** to provide **technical, legal and engineering assistance to communities** affected by hydropower projects.
- **Exploring opportunities to use other visualisation tools through arts (theater, music), working with local NGOs engaged into art and theater performance** to convey messages on particular technical aspects of hydropower projects.



Let's continue the conversation!

Message me your questions or comments in the IAIA26 app.

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